PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : G06F

A2

(11) International Publication Number: WO 98/38563

(43) International Publication Date: 3 September 1998 (03.09.98)

(21) International Application Number: PCT/US98/03739

(22) International Filing Date: 24 February 1998 (24.02.98)

(30) Priority Data:
08/806,780 26 February 1997 (26.02.97) US

(71) Applicant: MEYER–CHATFIELD, INC. [US/US]; Suite 724, 261 Old York Road, Jenkintown, PA 19046 (US).

(72) Inventors: MEYER, Bennett, S.; 1284 Fritz Circle, Huntingdon Valley, PA 19006 (US). CHATFIELD, William, D.; 5 East Buck Road, Downingtown, PA 19335 (US). SLUDER, Larry, R.; 3717 Stonington Drive, Plano, TX 75093 (US). RADOSEVICH, James, W.; Apartment 2205, 2116 Marsh Lane, Carrollton, TX 75006 (US).

(74) Agent: DREYER, Douglas, P.; Meyer–Chatfield, Inc., Suite 724, 261 Old York Road, Jenkintown, PA 19046 (US).

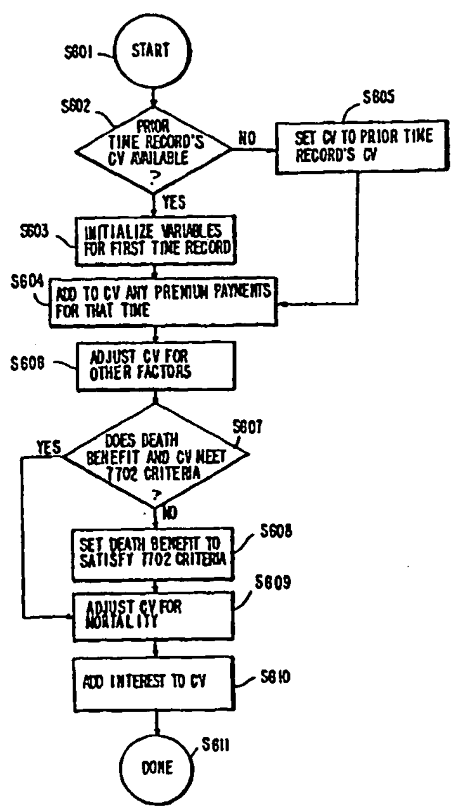
(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).

Published
Without international search report and to be republished upon receipt of that report.

(54) Title: SYSTEM AND METHOD FOR CONTROLLING THE CASH VALUE GROWTH OF AN INSURANCE POLICY

(57) Abstract

A system and method for managing cash value growth of life insurace policies by adjusting the death benefits levels, durations, and premiums of the insurance policy.



FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece			TR	Turkey
BG	Bulgaria	HU	Hungary	ML	Mali	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MN	Mongolia	UA	Ukraine
BR	Brazil	IL	Israel	MR	Mauritania	UG	Uganda
BY	Belarus	IS	Iceland	MW	Malawi	US	United States of America
CA	Canada	IT	Italy	MX	Mexico	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NE	Niger	VN	Viet Nam
CG	Congo	KE	Kenya	NL	Netherlands	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NO	Norway	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	NZ	New Zealand		
CM	Cameroon			PL	Poland		
CN	China	KR	Republic of Korea	PT	Portugal		
CU	Cuba	KZ	Kazakstan	RO	Romania		
CZ	Czech Republic	LC	Saint Lucia	RU	Russian Federation		
DE	Germany	LI	Liechtenstein	SD	Sudan		
DK	Denmark	LK	Sri Lanka	SE	Sweden		
EE	Estonia	LR	Liberia	SG	Singapore		

SYSTEM AND METHOD FOR CONTROLLING THE CASH VALUE GROWTH OF AN INSURANCE POLICY

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a system and method for controlling the cash value growth of an insurance policy.

2. Description of the Related Art

Life insurance policies are often purchased by companies for different purposes. For example, a company may purchase life insurance policies for its employees as a benefit of their employment, with death benefits going to the employees' beneficiaries. A bank may purchase life insurance policies on its borrowers with death benefits

going to the bank at levels sufficient to cover the outstanding mortgage amounts.

Typically, companies also use the life insurance policies as an investment vehicle. Thus, present systems attempt to maximize positive cash value growth ("CVG"), thus increasing the cash value, of the policies (as used herein, CVG is the difference between the cash value and basis of the insurance policy). In some situations, however, large positive CVG can adversely affect a company's liquidity, and investment and business options due to regulatory limitations and business concerns. For instance, banks have regulatory limitations on the amount of investment they can have in life insurance. Thus, if a bank has a number of life insurance policies to cover a given number of borrowers, as the CVG increases, the bank may have to cover fewer borrowers to remain in regulatory compliance.

Another disadvantage of large CVG is that if borrowers prepay their mortgages, the bank may want to exchange the insured of the life insurance policies covering the original borrowers to new borrowers. Large CVG may have a significant adverse financial impact on the bank when it effects these exchanges.

Accordingly, there is a need for a system to manage the CVG of life insurance policies and to ensure that the insurance policies remain in regulatory compliance.

SUMMARY OF THE INVENTION

The present invention provides a unique system and method that overcome the disadvantages of prior art systems by managing the CVG of these insurance policies through the adjustment of death benefit levels, and returns excess CVG to the company as death benefits.

In one preferred embodiment, the system accesses selected data having terms associated therewith. These terms can be, for example, the death benefit, premium, credited interest, etc. of the insurance policy. The data may consist of data for the terms for a point in time or may consist of historical and/or future data. The system then calculates a first value, such as the cash value of the insurance policy, from the accessed data for a predetermined point in time. Next, the system compares the first value to a predetermined value. For instance, the system may compare the cash value to a precalculated target cash value for the predetermined point in time. The system then applies an adjustment to the results of the comparison in accordance with a predetermined criteria. As an example, the system, based upon the comparison determines the death benefit adjustment. The system then modifies at least one of the terms, such as the death benefit, in accordance with the adjustment so that the cash value growth of the life insurance policy is managed.

In another preferred embodiment, the invention

accesses selected data having terms associated therewith. These terms can be, for example, the death benefit, premium, credited interest, etc. of the insurance policy. The data may consist of data for the terms for a point in time or may consist of historical and/or future data. The system then calculates a first value, such as the cash value of the insurance policy, from the accessed data for a first predetermined point in time. The system also calculates a second value, such as the cash value of the insurance policy, from the accessed data for a second predetermined point in time. Next, the system compares the first value to a first predetermined criteria, for example, the basis, to determine, for instance, if the cash value is greater than the basis and by how much, for the first predetermined point in time. The system also compares the second value to a second predetermined criteria, for example, zero, to determine, for instance if the second cash value of the insurance policy is greater than a certain amount over zero for the second predetermined point in time. The system then applies an adjustment to at least one of said comparisons in accordance with a third predetermined criteria. For example, the system, based upon the comparisons, determines the death benefit adjustment. The system then modifies at least one of said terms, such as the death benefit, in accordance with the adjustment so that the cash value growth of the insurance policy is managed.

In yet another preferred embodiment, the system accesses selected data having terms associated therewith. These terms can be, for example, the death benefit, premium, credited interest, etc. of the insurance policy. The data may consist of data for the terms for a point in time or may consist of historical and/or future data. The system then calculates a first value, such as the cash value of the insurance policy, from the accessed data for a first predetermined point in time. The system also calculates a second value, such as the basis, from the accessed data for the first predetermined point in time. The system also calculates a third value, such as the cash value, from the accessed data for a second predetermined point in time. The system compares the first value to the second value of the insurance policy, for example, to obtain the amount of the cash value over the basis, and also compares the third value to a first predetermined criteria, such as zero, to determine if the cash value at the second predetermined point in time is certain amount greater than zero. Based upon these comparisons, the system applies an adjustment to at least one of said comparisons in accordance with a second predetermined criteria. For example, if the amount of the cash value over the basis is greater than a certain predetermined amount, then the amount that the death benefit level should be raised, if possible, is determined. The system then modifies at least one of the terms in accordance with

the adjustment, such as raising the death benefit by the amount determined, so that the cash value growth of the insurance policy is managed.

Accordingly, it is an object of this invention to provide a system and method for managing the CVG of life insurance policies by adjusting the death benefit and/or premium of individual policies to meet the company's financial objectives while remaining in regulatory compliance.

It is also an object of this invention to provide a system and method of calculating and administering the adjustments to the life insurance policies over the life of the policies.

It is also an object of this invention to increase a company's ability to work within capital limitations set by regulations.

Additional objects of the invention, can be obtained by reference to the following detailed description of the preferred embodiments thereof in connection with the attached drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a block diagram depicting an apparatus in accordance with various aspects of the invention.

FIG. 2 is a block diagram of a life insurance database containing data for individual life insurance policies.

FIG. 3 is a detailed block diagram of the data retained by each individual life insurance policy.

FIGs. 4 and 4a are high-level flow charts of the steps taken by the apparatus in FIG. 1 in practicing the invention.

FIG. 5 is a detailed flow chart further illustrating step S404 of FIG. 4.

FIG. 6 is a detailed flow chart further illustrating step S505 of FIG. 5.

FIG. 7 is a graph of the cash value of an exemplary insurance policy over time.

FIG. 8 is a graph of the death benefit levels of the exemplary insurance policy of FIG. 7 over time.

FIGs. 9 through 11 provide additional exemplary illustrations.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIG. 7, illustrates graphically the cash value, depicted by line 701, of an exemplary 30-year single premium insurance policy over a period of time. Line 701 illustrates that in this insurance policy, the cash value of the policy rises in the early years, then starts to decrease after around the fifth year. If the cash value reaches zero before the term of the policy, as shown by line 702, then the policy lapses since there are insufficient funds to keep the policy in-force for the duration of the term. If there is cash value at the end

of the policy, as shown by line 704, then the policy has not lapsed, but has surplus cash value to provide, in this example, insurance coverage for several additional years. In a preferred embodiment, the ideal situation is depicted by lines 701 and 703 depicting minimal cash value at the end of the insurance policy term. Line 705 depicts the basis of the insurance policy.

FIG. 8 depicts changes in the death benefit level of the exemplary policy in accordance with one aspect of the present invention. Lines 801 and 803 depict one possible situation where the cash value growth matches the company's cash value growth objectives, and thus does not need to be adjusted beyond a predetermined schedule. In this example, the death benefit level, adjusted once per year follows, rises in the early years, until about the fifth year where it starts to decrease. Other possibilities include the death benefit level being adjusted to follow the insurable interest (e.g., the death benefit follows the amortized mortgage amount), or starting at a high level, and then being reduced in succeeding years, as shown in FIG. 9a.

If the death benefit level terminates before the end of the policy term, as shown by line 802, that may indicate that the policy has lapsed because of insufficient cash value. Death benefits beyond the end of the policy term, as shown by line 804, may indicate the presence of surplus cash value that can continue to fund

the policy for several years beyond the original policy term. In the preferred embodiment, as depicted by lines 801 and 803, the death benefit should be minimized at the end of the policy term, although there may be desirable minimum levels of death benefits required.

Line 805 illustrate adjustments to the death benefit level in accordance with one aspect of the present invention to control the CVG of the insurance policy. In particular, assume that there is higher then desired cash value growth in year five. Then, line 805 depicts that in year six, the death benefit level is adjusted higher, thereby increasing the cost of insurance, which in turn reduces the excess CVG. In year seven, the duration of a death benefit level is again adjusted to remain at the same level for another year to further reduce the CVG. In each of years eight and nine, the death benefit level is adjusted downward, to more closely match, for example, the amortized mortgage amount for those years.

FIGs. 9a through 11b, provide additional exemplary illustrations in accordance with various aspects of the present invention. In FIGs. 9a, 10a and 11a, respective lines 901, 1001, and 1101, represent the death benefit level over time. Lines 902, 1002, and 1102 represent the maximum death benefit level for the insurance policy in accordance with an exemplary United States insurance law. Different states, though, have different insurance related laws, and thus this maximum

death benefit may change from state to state. Lines 903, 1003, and 1103 represent the minimum death benefit level, which would, in this case, be the amortized mortgage amount of the exemplary loan over time.

In FIGs. 9b, 10b, and 11b, respective lines 904, 1004 (including line 1006), and 1104, represent the cash value of the insurance policy over time. Lines 905, 1005, and 1105 represent the basis of the insurance policy over time.

These sets of figures illustrate three different scenarios in accordance with various aspects of the present invention. FIGs. 9a and 9b present a base case where the death benefit is maintained for the first eight years at a high level for as long as CVG is greater than zero. Once the cash value equals or drops below the basis, the death benefit level is adjusted to follow the amortized mortgage amount.

FIGs. 10a and 10b take the same initial scenario as in FIGs 9a and 9b, but where the CVG is less than expected. As shown by the portion of line 104 identified as line 1006, the cash value of the insurance policy has dropped below the basis in year four, in contrast with year eight in FIG. 9b. Thus, in this example, the death benefit level also drops down to the minimum death benefit level, i.e., the amortized mortgage amount, by year eight. By year ten the remaining cash value of the insurance policy is determined to be insufficient to fund the policy

for the full thirty years, and additional premiums are added to increase the cash value to sustain the policy for the full term.

FIGs. 11a and 11b take the same initial scenario as in FIGs. 9a and 9b, but assumes that the CVG is greater than the expected. In this case, the death benefit level is kept at the maximum level through year 14, where it then drops by year 16 to a level no less than the amortized mortgage amount. The high death benefit level is sustained in for several years even beyond the time which the cash value of the insurance policy has dropped below the basis, in contrast with the scenarios depicted in FIGs. 9b, and 10b, to control the effect of the excess CVG in the earlier years, and to keep the policy from extending past the designated term.

FIG. 1 depicts in block diagram form an apparatus according to one aspect of the present invention.

In particular, the apparatus of FIG. 1 includes CPU 101 for executing program instructions. These program instructions can be stored in RAM 102, ROM 103, and/or mass storage device 104 for access by CPU 101. Also connected to CPU 101 is monitor 105 and keyboard/mouse 106 for allowing an operator to manipulate and input information. Upon appropriate program instructions, CPU 101 outputs to printer 107, modem 108, and/or LAN interface 109 information generated in accordance with the

present invention, as will be set forth in greater detail below.

Mass storage device 104, such as a hard disk, disk array, or PC Card storage device, is connected for access by CPU 101. Although depicted here as directly connected to CPU 101, such direct connection need not be used. Alternatively, there may be intervening devices, or mass storage device 104 may instead be connected to network 110, and thus separate from, but still be accessible by, CPU 101. Typically, mass storage device 104 stores program instructions which are accessed and executed by CPU 101. In addition, mass storage device 104, RAM 102, and/or and ROM 103 can store data, such as policy database 111 and global data 112, which are accessed and processed by CPU 101 in accordance with the program instructions. Other program instructions and data may also be stored on mass storage device 104 and executed by CPU 101 as designated by the operator. Policy database 111 is shown in FIG. 1 connected with CPU 101.

Data that apply to all policy records may be stored in global data 112. This global data may include actuarial mortality data, cost data, and data necessary to ensure that changes to the terms and values of the insurance policy, such as the cash value and death benefit level, of each insurance policy comply with all applicable governmental regulations. For example, in the United States, IRS Regulation § 7702 sets forth different

alternative tests for defining what constitutes a life insurance contract. The first test looks to the cash value accumulation of the insurance policy. The second test looks to the cash value corridor, which is a function of the death benefit and cash surrender value. Global data 112, thus would contain the necessary data for CPU 101 to determine in later steps compliance with this regulation. Other countries, such as Canada, may have similar governmental regulations that must be complied with.

FIG. 2 depicts in greater detail one embodiment of the data structure of policy database 111, which holds the data for a block of insurance policies. In particular, policy database 111 comprises a set of policy records. As an example, three policy records P1, P2, and P3 are depicted in FIG. 2. Each policy record represents the data for an individual life insurance policy stored on mass storage 104. It is of course understood by one skilled in the art that there may be a different number of policy records than those shown in FIG. 2. For example, a company purchasing a block of 30,000 insurance policies would typically have at least 30,000 policy records in policy database 111. For simplicity, a bank will be used herein to illustrate operation of the present invention, although such use is not limited to a bank.

FIG. 3 shows a generic policy record P as representative of the types of data stored in any specific

individual policy record. In the specific embodiment shown in FIG. 3, policy record P has fields to store the data representative of an individual policy holder, such as the holder's NAME, SEX, AGE, and HEALTH. Policy record P is, however, not limited to a single-life insurance policy -- it may also represent other types of insurance policies, such as joint first-to-die policies and the associated information for each individual listed on those policies.

Policy record P may also store data representing the past, present, and projected future value of various terms and values of the insurance policy. These terms and values may include, among other things, the death benefit, mortgage amount, premiums paid and to be paid, and cash value. Referring to FIG. 3, policy record P includes in this embodiment related records for a number of the years, depicted as year records Y1, Y2, and Y3, where each year record contains the terms and values of the insurance policy for a particular year. Although only three year records as shown in FIG. 3, if projected terms and values are to be retained, there may be about 100 related year records for a specific policy.

When practicing the invention, the operator or plan administrator may update and adjust the insurance policies' data several times a year. Accordingly, each year record includes related time records T1, T2, and T3. These time records store the terms and values of the

insurance policy for given points in time. As before, although only three time records are shown in FIG. 3, the actual number of related time records for each year record could vary.

In the preferred embodiment, the actual terms and values for each of the insurance policies in database 111 would be updated once a month. Thus, each related year record would include twelve time records, one for each month of that year. Also, the future values for the terms and values, such as the cash value of the policy 27 years in the future would also be calculated, and in the preferred embodiment, would be projected out 109 years from the start of the policy, thus requiring 109 year records.

There are of course many variations on how much data to retain that are within the scope of the present invention. For instance, if only the most current terms and values need to be retained, then only one time record needs to be stored. In addition, any records needed for calculations can be temporarily created during calculations and discarded afterwards, which has the advantage of reducing the data required to be saved at the expense of easy access to projected values.

Likewise, FIG. 2 shows policy database 111 as a single database file for simplicity, with policy records already created. In practice, policy database 111 may be a relational database design where the policy records,

related year records and related time records are in different databases that may be related, one to another, as seen fit by the user. These and other types of database designs and data structures, such as object-oriented database designs, are well known in the art.

FIG. 4 is a high-level flow chart depicting the overall operation of the apparatus in FIG. 1, in accordance with the steps of the invention starting at step S401 and ending at step S408. In particular, at steps S402 and S403 respectively, CPU 101 opens policy database 111 and accesses the data for the first policy record of interest, for example, policy record P1.

Using the data from the policy record, and data from global data 112, CPU 101 then calculates at step S404 any changes to the policy, including the policy's terms and values, and updates and adjusts the policy record with those changes. At step S405, CPU 101 determines if this is the last policy record of interest. If not, CPU 101 gets the next policy record at step S406, e.g., policy record P2, and executes step S404 for that policy record. CPU 101 continues executing step S404 for each policy record of interest until at step S405 CPU 101 determines that there are no other policy records of interest in policy database 111 to evaluate. CPU 101 then executes step S407 to generate a report detailing the changes made to the policies. The changes can be reported either on an individual policy-by-policy basis or on an aggregate basis

for all policies. FIG 4a. shows an alternative embodiment where changes to a policy record are reported as each policy is evaluated.

FIG. 5, starting at step S501 and ending at step S516, is a flow chart depicting in greater detail step S403 of FIGs. 4 and 4a. In step S502, CPU 101 initializes any variables and parameters needed for calculating changes to the current policy record (i.e., the currently accessed policy record). These variables and parameters may include, for instance, data on how frequently policy premiums are paid and industry standard actuarial tables for the particular policy holder's sex, age, and health. Global data 112 may also be accessed at this time, and it is well within the ability of one skilled in the art to retrieve this data at other times, such as in step S402, if needed.

Once the initialization step is complete, CPU 101 executes steps S503 and S504 to access the first related year record of interest and the first related time record of interest of that year record, respectively.

For purposes of illustrating steps S503 and S504, using the database as described in FIGs. 2 and 3, let the anniversary date for the currently accessed policy be January 1 and let the administration system be run once a year, on December 31. At the end of the first run, all related year and month records for that year will have data entered, through 109 year records. The terms and

values calculated for the months of the first year record would use the actual data of premiums paid in, interest rates, benefits paid out, etc. The data in the following year records would be projected data based on anticipated values, such as interest rates and mortality rates and costs. When the calculations are run again on December 31 the following year, CPU 101 can start the calculations beginning on the related year record and January month record for the second year, since the related year record for the first year now has historical data and no longer needs to be calculated.

At step S505, CPU 101 calculates the insurance policy's cash value for the current time record, which in this example is a projected cash value. Determining the cash value of the policy will be described in greater detail in FIG. 6.

Next, CPU 101 determines at step S506 whether the projected CVG meets a predetermined criteria. For instance, in the case of a bank, the CVG may need to be minimized, for example, so that the cash value is within a certain percentage of the basis to meet the CVG objectives for that bank. The bank may also want to minimize this projected CVG due to governmental regulations. In the preferred embodiment, the basis of the insurance policy is the total of all premium payments paid or to be paid up to this point in time.

To minimize this projected CVG, at step S507 CPU 101 first attempts to adjust the death benefit for that time period by increasing the death benefit level of coverage. Increasing the death benefit level increases the cost of the policy, which in turn reduces the projected cash value, and thus reduces the CVG. In the preferred embodiment, the adjustment to the death benefit in step S507 is given by the formula:

$$DB\ adj. = .95 * \frac{CVG}{cost\ of\ insurance\ per\ 100K\ of\ benefits}$$

where

$$CVG = cash\ value - total\ premium\ payments$$

Flow then resumes at step S505 to recalculate the projected CVG based on the adjusted death benefit level.

In the United States, the maximum death benefit level is constrained by regulations, which may vary from state to state. For example, some state regulations constrain the maximum death benefit to 160% of the insurable interest. For the case of a bank and home mortgages, the death benefit level cannot be increased beyond 160% of the initial mortgage amount. If at step S506 the death benefit level cannot be increased any further to minimize CVG, then program flow continues to step S508.

If there are more time records to calculate, as determined in step S508, then CPU 101 accesses at step

S509 the next related time record and calculates the projected cash value of the insurance policy for that time period. In this manner, CPU 101 calculates the projected cash value and the terms need to achieve that cash value for each of the related time records for the currently accessed year record.

If at step S508 CPU 101 determines that all calculations for the currently accessed year record are complete, it then determines at step S510 whether there are more year records to calculate. If so, CPU 101 proceeds to step S511 to access the next year record and starts calculating in the manner described above the projected cash values for each of the related time records for that year.

If at step S510 CPU 101 determines that there are no additional related year records to calculate, then CPU 101 determines at step S512 whether the cash value objective for the end of the insurance policy term has been met.

To achieve the cash value objective, as depicted by lines 703 and 803 of FIGs. 7 and 8, CPU 101 examines the cash value at the end of the policy term and compares it to a predetermined criteria. Thus, for a 30-year mortgage the typical policy would have, although not be limited to, a term of 30 years, depending on the objectives of the bank. CPU 101 would examine the projected cash value at year 30, and if the policy is

still in-force at this time, that is, there were sufficient premiums to pay for coverage through to this time, and the projected cash value meets a predetermined criteria, such as the cash value being within a few percentage points of the cost of insurance for that year, then the cash value objective of the preferred embodiment has been met and program flow returns to S405 on FIG. 4.

If the cash value objective has not been met, program flow proceeds to step S513 where CPU 101 determines if the policy will lapse. If the policy will still be in-force, then the cash value must be greater than the cash value objective and thus must be reduced. In the preferred embodiment, at step S514, the excess cash value is reduced by adjusting the death benefit as in step S507, if possible, or by adjusting the time that the death benefit remains at a particular level. Referring to FIG. 8, line 805 illustrates that the death benefit level is adjusted to be maintained at the same level as year five for two additional years, though it may have been different in the first iteration. This will increase the cost of insurance for those two years and thus reduce the cash value and control the CVG.

If at step S513 the policy has lapsed, then additional premiums must be paid in to fund the insurance policy for the remainder of the term. This adjustment to the premium would typically take place as early as possible. For instance, using the previous example, if

calculations at the end of the second year indicate that insufficient premiums are needed to fund the policy to full term, then the additional amount needed should be determined and deemed to have been paid during the third year, the first and second years having already past. This amount can be determined, for instance, by iteratively adding additional premium payments to the cash value and determining if the amount is sufficient to fund the policy to term. Referring to FIG. 10b, another way to determine the additional premium payments would be, for instance, to vertically raise the cash value curve, i.e. line 1004, so that the cash value at the end of the term is sufficient (for example, crosses the x-axis at the end of the term). The amount the line 1004 was raised is the amount of additional premiums needed.

Flow then returns to step S503 with the new premium values or death benefit level adjustments to recalculate the projected cash value, death benefit and other terms and values as just described above, until the cash value objective at step S512 has been met.

FIG. 6, starting at step S601 and ending at step S611, depicts in greater detail step S505, which primarily calculates the insurance policy's cash value at a particular point in time. Specifically, CPU 101 at step S602 determines if there is a prior time record cash value that can be used when calculating the current time record's cash value. If there is, then CPU 101 uses at

step S605 the cash value of the prior time record as the initial cash value for the current time record. If at step S502 CPU 101 determines that there is no prior time record, such as when the current time record is the first time record of the first year record, then CPU 101 will assign a value in step S603 for the initial cash value, for example, a value of zero.

Next, CPU 101 adds at step S604 any additional premiums paid, or projected to be paid, for that point in time, to the initial cash value. At step S606, CPU 101 adjusts the cash value for other factors, such as additional premium payments, refunds based on the "pooled mortality," or interest rates. In effect, step S505 calculates the cash value of the insurance policy for that point in time.

To manage the CVG accurately, the preferred embodiment uses a block of life insurance, with a large number of insurance policies all in the same or similar class. This allows the use of a "pooled mortality." Insurance carriers could then use pooled mortality rates for the class to determine the amount of death benefits it expects to pay out over a given time period. Depending on the terms of the policies, any amount not paid out could be refunded to the insurance policies in the block as a dividend or excess interest credit, thereby increasing the policies' individual and aggregate cash value. As to interest rates, if the expected interest rate used

throughout the year was 6% per month, but at the end of the year, was determined to actually be 6.5% per month, then the cash value could be recalculated using a 5.5% interest rate. Any surplus or deficit could then be prorated for each policy and added or subtracted from the cash value, respectively, for each policy.

Next at step S607, CPU 101 determines if the insurance policy complies with governmental regulations. In the embodiment shown in FIG. 6, CPU 101 determines if the policy's death benefit and cash value comply with IRS Regulation § 7702. If there is compliance, flow proceeds to step S609, otherwise CPU 101 adjusts the death benefit at step S608 to force compliance with § 7702 for a given cash value. Of course, if there are any other regulations to comply with (governmental or otherwise) such steps could be added in the necessary place in the system logic flow by one skilled in the art. Flow then proceeds to step S609.

At step S609, CPU 101 adjusts the cash value for mortality (which can be different for different insurance carriers) and then adds the interest amount for the relevant time period at step S610. This completes the calculation of the cash value for the current time record.

Although one way of calculating the cash value of the insurance policy is presented herein, the present invention is not limited to such calculation. It is well known in the art that the cash value for an insurance

policy depends on a multitude of variables, such as the demographics of the insured, assumed interest rates, and financial objectives of a company, all of which may vary between companies and between insurance companies. Nevertheless, it is well known in the art, and well within the ability of one skilled in the art, to use these variables in determining the cash value curve for an insurance policy and as such, the cash value curves, as shown by lines 904, 1004, and 1104, for example, will vary depending on the exact circumstances and particulars of an insurance policy.

In an alternative embodiment, CPU 101 at step S506, determines if the calculated CV has deviated from an expected cash value in accordance with a predetermined criteria. If, for example, the calculated CV is below a predetermined amount from an expected cash value, then there may be insufficient premiums to continue the policy to full term, and additional premiums are needed to sustain the policy to term. Such an adjustment to the premium can also take place in step S507.

In the manner described above, the present invention thus provides a system and method to adjust insurance policies terms and values to manage their CVG. While this invention has been described with reference to the preferred embodiments, other modifications will become apparent to those skilled in the art by study of the specification and drawings. It is thus intended that the

following appended claims include such modifications as fall within the spirit and scope of the present invention.

What we claim is:

CLAIMS

1. A method of managing the cash value growth of a life insurance policy comprising:
accessing selected data having terms associated therewith, wherein said data is representative of the insurance policy;
calculating a first value from said data of the insurance policy for a predetermined point in time;
comparing said first value to a predetermined value at said predetermined point in time;
applying an adjustment to said comparison in accordance with a predetermined criteria; and
modifying at least one of said terms in accordance with said adjustment so that the cash value growth of the life insurance policy is managed.

2. A method of managing the cash value growth of a life insurance policy comprising:
accessing selected data having terms associated therewith, wherein said data is representative of the insurance policy;
calculating a first value from said data of the insurance policy for a first predetermined point in time;

calculating a second value from said data of the insurance policy for a second predetermined point in time;

comparing said first value to a first predetermined criteria;

comparing said second value to a second predetermined criteria;

applying an adjustment to at least one of said comparisons in accordance with a third predetermined criteria; and

modifying at least one of said terms in accordance with said adjustment so that the cash value growth of the insurance policy is managed.

3. A method according to claims 1 or 2 wherein said first value represents a cash value of the insurance policy.

4. A method according to claim 1 wherein said predetermined value represents a cash value.

5. A method according to claim 2 wherein said second value represents a cash value of the insurance policy.

6. A method according to claims 1 or 2 wherein said at least one of said terms represents a death benefit level of the insurance policy.

7. A method according to claims 1 or 2 wherein said at least one of said terms represents a premium of the insurance policy.

8. A method of managing the cash value growth of a life insurance policy comprising:
accessing selected data having terms associated therewith, wherein said data is representative of the insurance policy;
calculating a first value from said data of the insurance policy for a first predetermined point in time;
calculating a second value from said data of the insurance policy for said first predetermined point in time;
calculating a third value from said data of the insurance policy for a second predetermined point in time;
comparing said first value to said second value of the insurance policy;
comparing said third value to a first predetermined criteria;

applying an adjustment to at least one of said comparisons in accordance with a second predetermined criteria; and

modifying at least one of said terms in accordance with said adjustment so that the cash value growth of the insurance policy is managed.

9. A method according to claim 8 wherein said first value represents a cash value of the insurance policy.

10. A method according to claim 8 wherein said second value represents a basis of the insurance policy.

11. A method according to claim 8 wherein said third value represents a cash value of the insurance policy.

12. A method according to claim 8 wherein said at least one of said terms represents a death benefit level of the insurance policy.

13. A method according to claim 8 wherein said at least one of said terms represents a premium of the insurance policy.

14. A system for managing the cash value growth of a life insurance policy comprising:

means for accessing selected data having terms associated therewith, wherein said data is representative of the insurance policy;

means for calculating a first value from said data of the insurance policy for a predetermined point in time;

means for comparing said first value to a predetermined value at said predetermined point in time;

means for applying an adjustment to said comparison in accordance with a predetermined criteria; and

means for modifying at least one of said terms in accordance with said adjustment so that the cash value growth of the life insurance policy is managed.

15. A system for managing the cash value growth of a life insurance policy comprising:

means for accessing selected data having terms associated therewith, wherein said data is representative of the insurance policy;

means for calculating a first value from said data of the insurance policy for a first predetermined point in time;

means for calculating a second value from said data of the insurance policy for a second predetermined point in time;

means for comparing said first value to a first predetermined criteria;

means for comparing said second value to a second predetermined criteria;

means for applying an adjustment to at least one of said comparisons in accordance with a third predetermined criteria; and

means for modifying at least one of said terms in accordance with said adjustment so that the cash value growth of the insurance policy is managed.

16. A system according to claims 14 or 15 wherein said first value represents a cash value of the insurance policy.

17. A system according to claim 14 wherein said predetermined value represents a cash value.

18. A system according to claim 15 wherein said second value represents a cash value of the insurance policy.

19. A system according to claims 14 or 15 wherein said at least one of said terms represents a death benefit level of the insurance policy.

20. A system according to claims 14 or 15 wherein said at least one of said terms represents a premium of the insurance policy.

21. A system for managing the cash value growth of a life insurance policy comprising:
means for accessing selected data having terms associated therewith, wherein said data is representative of the insurance policy;
means for calculating a first value from said data of the insurance policy for a first predetermined point in time;
means for calculating a second value from said data of the insurance policy for said first predetermined point in time;
means for calculating a third value from said data of the insurance policy for a second predetermined point in time;
means for comparing said first value to said second value of the insurance policy;
means for comparing said third value to a first predetermined criteria;

means for applying an adjustment to at least one of said comparisons in accordance with a second predetermined criteria; and

means for modifying at least one of said terms in accordance with said adjustment so that the cash value growth of the insurance policy is managed.

22. A system according to claim 21 wherein said first value represents a cash value of the insurance policy.

23. A system according to claim 21 wherein said second value represents a basis of the insurance policy.

24. A system according to claim 21 wherein said third value represents a cash value of the insurance policy.

25. A system according to claim 21 wherein said at least one of said terms represents a death benefit level of the insurance policy.

26. A system according to claim 21 wherein said at least one of said terms represents a premium of the insurance policy.

27. A method of managing the cash value growth of a life insurance policy comprising:
   (a) accessing a first set of data values representing the death benefit of an insurance policy over time from a database associated with the insurance policy;
   (b) calculating a cash value growth of the insurance policy for a predetermined point in time based upon said first set of data values;
   (c) modifying said first set of data values if said cash value growth does not meet a first objective;
   (d) repeating step (b) followed by step (c) if said cash value growth does not meet a first objective until said cash value growth meets said first objective; and
   (e) generating a report which includes the changes or results of modifying said first set of data values.

28. A method of managing the cash value growth of a life insurance policy comprising:
   (a) accessing a first set of data values representing the death benefit of an insurance policy over time from a database associated with the insurance policy;

(b) accessing a second set of data values representing the basis of an insurance policy over time from a database associated with the insurance policy;

(c) calculating a cash value growth for the insurance policy for a first predetermined point in time based upon said first set of data values and said second set of data values;

(d) calculating a cash value for the insurance policy for a second predetermined point in time based upon said first set of data values and said second set of data values;

(e) modifying said first set of data values if said cash value growth does not meet a first objective;

(f) repeating steps (c) through (e) if said cash value growth does not meet said first objective until said cash value growth meets said first objective.

(g) modifying said first or second set of data values if said cash value does not meet a second objective;

(h) repeating steps (b) through (g) if said cash value does not meet said second objective until said cash value meets said second objective; and

(i) generating a report which includes the changes or results of modifying said first or second set of data values.

29. A computerized apparatus for managing the cash value growth of a life insurance policy comprising:
means for accessing a first set of data values representing the death benefit of an insurance policy over time from a database associated with the insurance policy;
means for repeatedly calculating a cash value growth for the insurance policy for a first predetermined point in time based upon said first set of data values, wherein said first set of data values is modified if said cash value growth does not meet a first objective; and
means for generating a report which includes the changes or results of modifying said first set of data values.

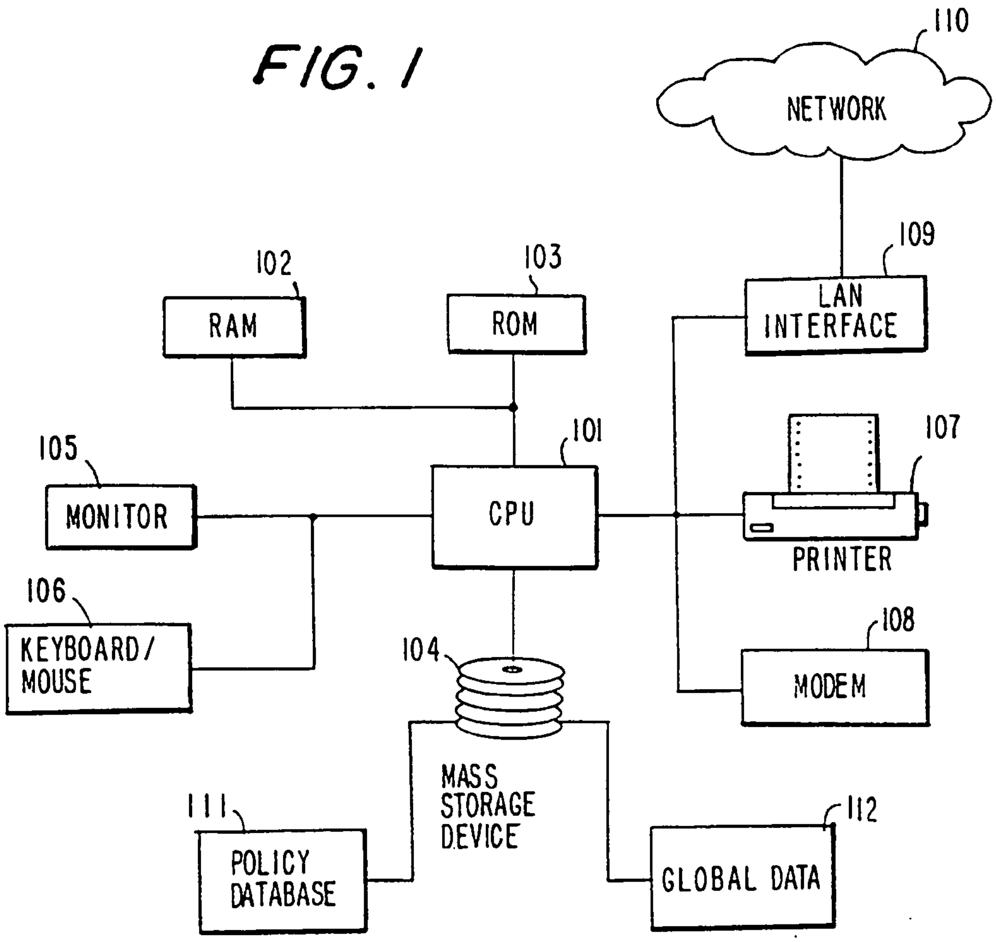
30. A computerized apparatus for managing the cash value growth of a life insurance policies comprising:
means for accessing a first set of data values representing the death benefit of an insurance policy over time from a database associated with the insurance policy;

means for accessing a second set of data values representing the basis of an insurance policy over time from a database associated with the insurance policy;

means for repeatedly calculating a cash value growth for the insurance policy for a first predetermined point in time and for calculating a cash value for the insurance policy for a second predetermined point in time based upon said first and second set of data values, wherein said first set of data values is modified if said cash value growth does not meet a first objective and said first or second set of data values is modified if said cash value does not meet a second objective; and

means for generating a report which includes the changes or results of modifying said first or second set of data values.

FIG. 1


110
NETWORK
109
LAN INTERFACE
102
RAM
103
ROM
101
CPU
105
MONITOR
106
KEYBOARD/ MOUSE
107
PRINTER
108
MODEM
104
MASS STORAGE DEVICE
111
POLICY DATABASE
112
GLOBAL DATA

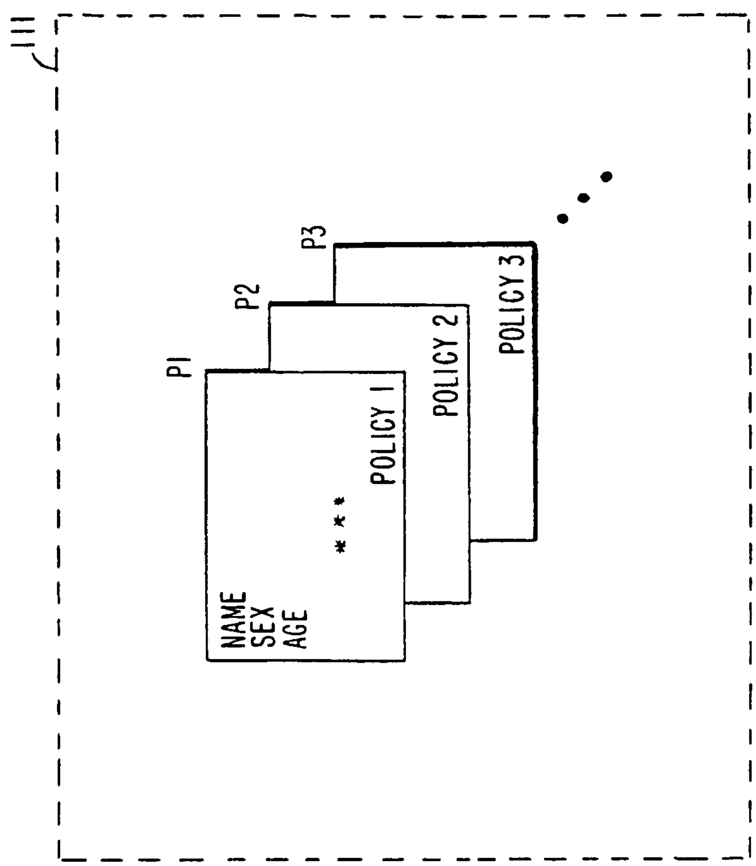


FIG. 2

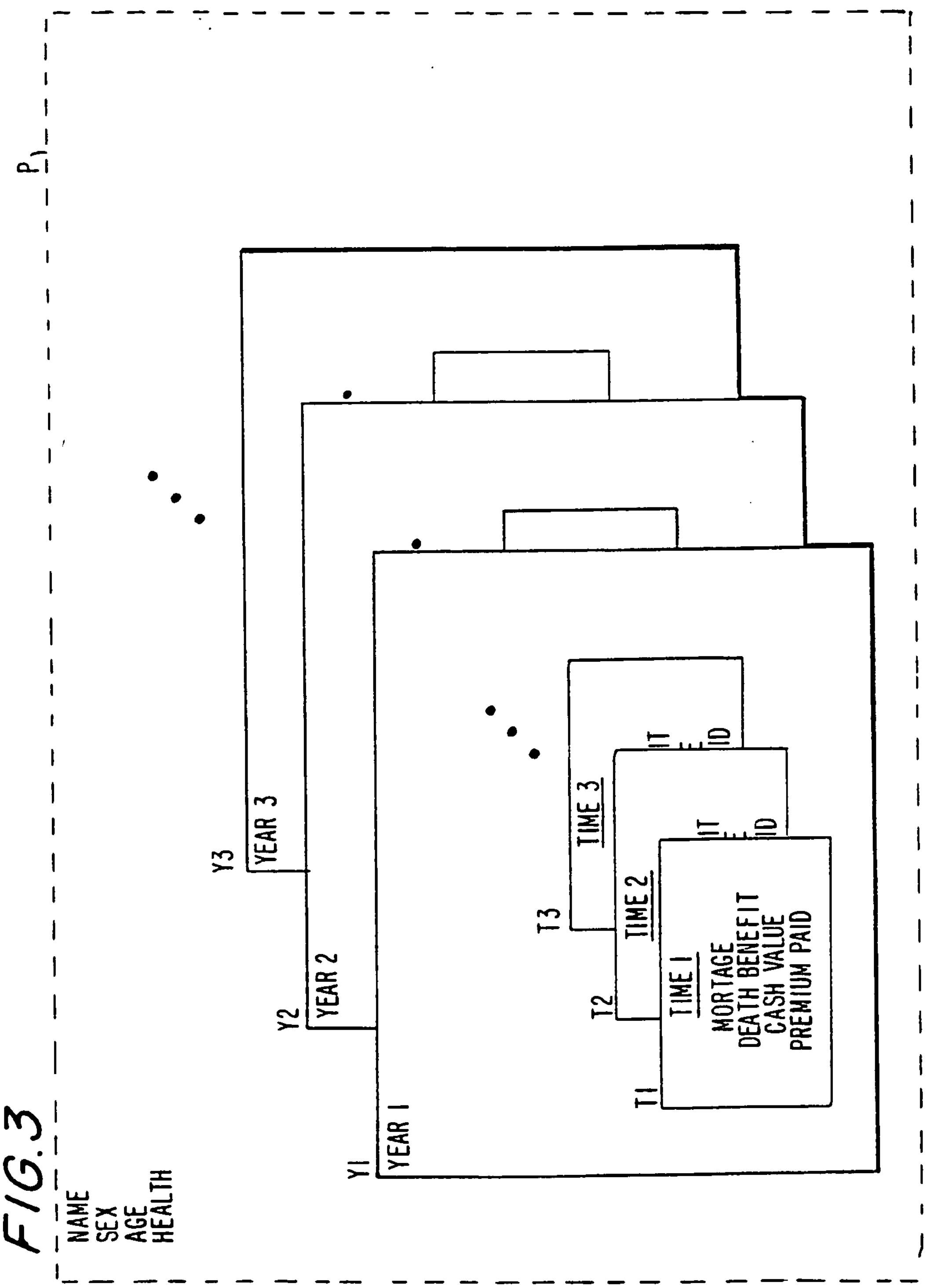

P1
NAME
SEX
AGE
HEALTH
Y1
YEAR 1
Y2
YEAR 2
Y3
YEAR 3
T1
TIME 1
MORTAGE
DEATH BENEFIT
CASH VALUE
PREMIUM PAID
T2
TIME 2
T3
TIME 3

FIG.3

FIG. 4

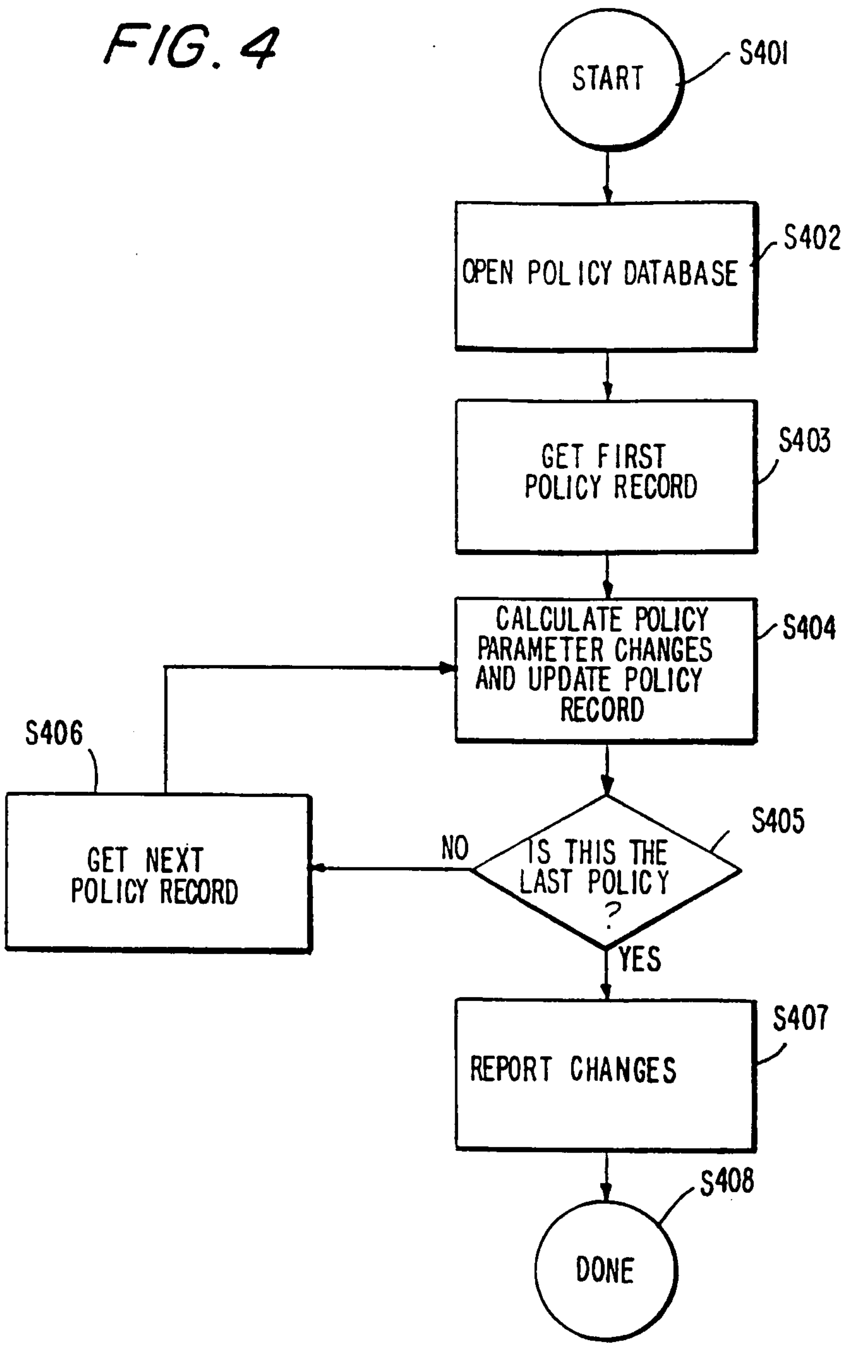

START
S401
OPEN POLICY DATABASE
S402
GET FIRST POLICY RECORD
S403
CALCULATE POLICY PARAMETER CHANGES AND UPDATE POLICY RECORD
S404
IS THIS THE LAST POLICY ?
S405
NO
YES
GET NEXT POLICY RECORD
S406
REPORT CHANGES
S407
DONE
S408

FIG. 4a

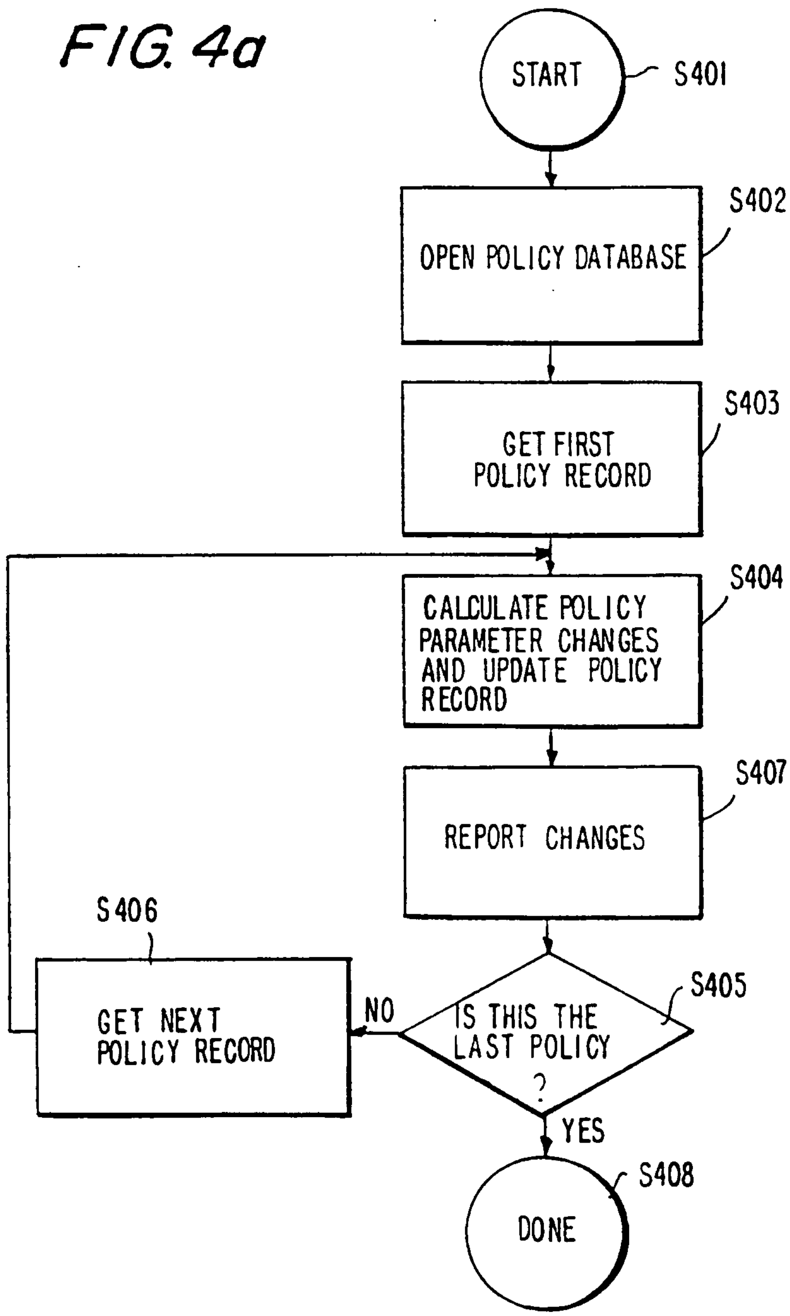

START
S401
OPEN POLICY DATABASE
S402
GET FIRST POLICY RECORD
S403
CALCULATE POLICY PARAMETER CHANGES AND UPDATE POLICY RECORD
S404
REPORT CHANGES
S407
S406
GET NEXT POLICY RECORD
NO
IS THIS THE LAST POLICY ?
S405
YES
DONE
S408

FIG. 5

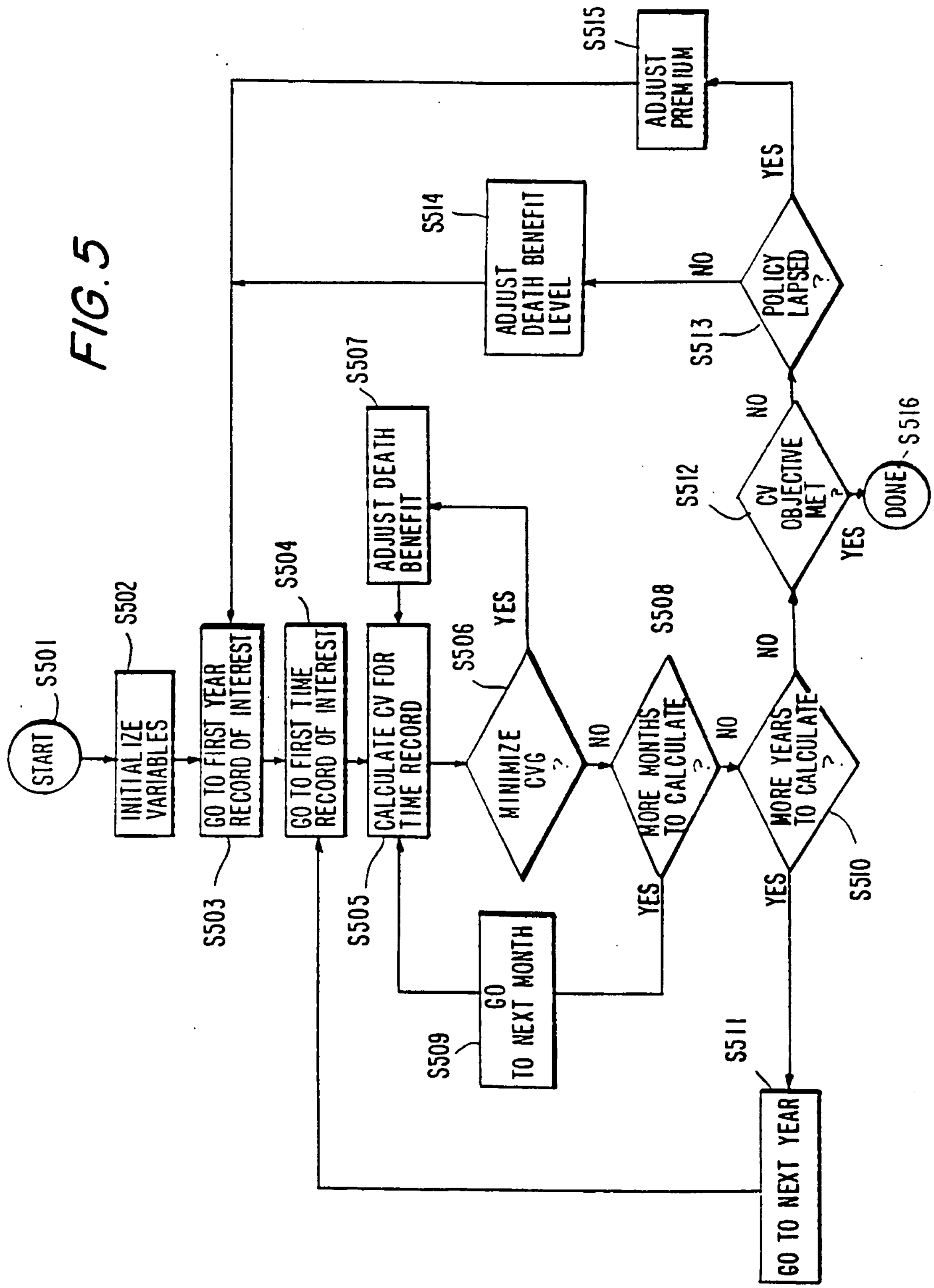
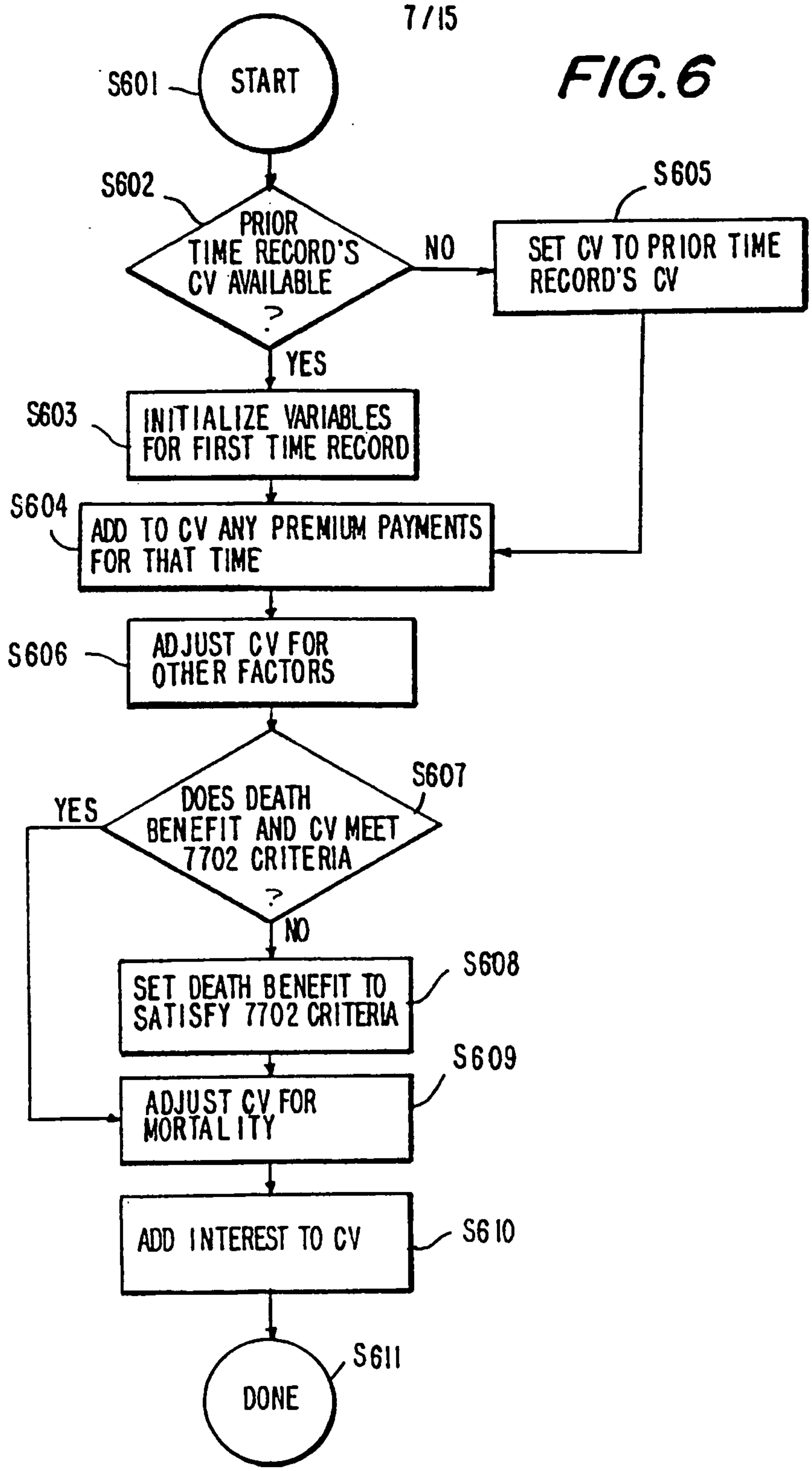

START
S501
INITIALIZE VARIABLES
S502
GO TO FIRST YEAR RECORD OF INTEREST
S503
GO TO FIRST TIME RECORD OF INTEREST
S504
CALCULATE CV FOR TIME RECORD
S505
MINIMIZE CVG ?
S506
YES
NO
ADJUST DEATH BENEFIT
S507
MORE MONTHS TO CALCULATE ?
S508
YES
NO
GO TO NEXT MONTH
S509
MORE YEARS TO CALCULATE ?
S510
YES
NO
GO TO NEXT YEAR
S511
CV OBJECTIVE MET ?
S512
YES
NO
DONE
S516
POLICY LAPSED ?
S513
YES
NO
ADJUST DEATH BENEFIT LEVEL
S514
ADJUST PREMIUM
S515

FIG.6


S601
START
S602
PRIOR TIME RECORD'S CV AVAILABLE ?
NO
S605
SET CV TO PRIOR TIME RECORD'S CV
YES
S603
INITIALIZE VARIABLES FOR FIRST TIME RECORD
S604
ADD TO CV ANY PREMIUM PAYMENTS FOR THAT TIME
S606
ADJUST CV FOR OTHER FACTORS
S607
DOES DEATH BENEFIT AND CV MEET 7702 CRITERIA ?
YES
NO
S608
SET DEATH BENEFIT TO SATISFY 7702 CRITERIA
S609
ADJUST CV FOR MORTALITY
S610
ADD INTEREST TO CV
S611
DONE

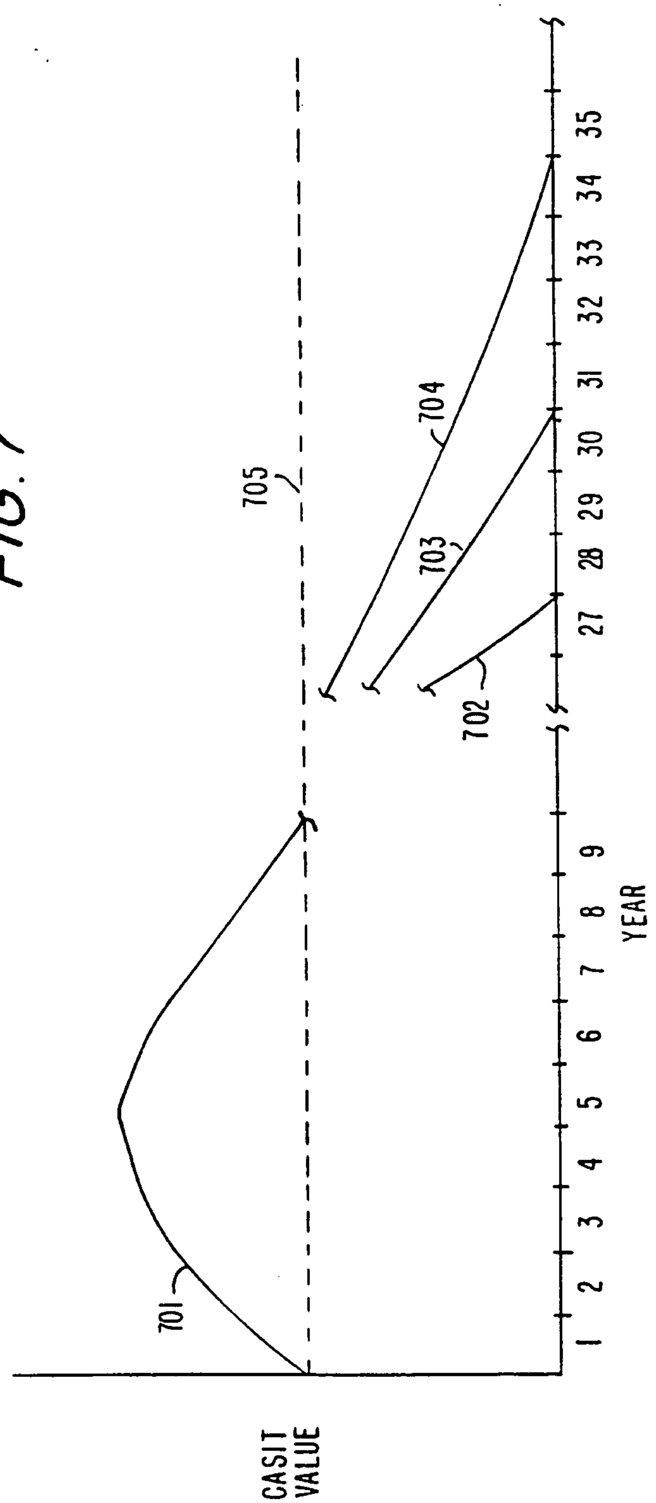

701
702
703
704
705
1 2 3 4 5 6 7 8 9
27 28 29 30 31 32 33 34 35
YEAR
CASIT
VALUE

FIG. 7

FIG. 8

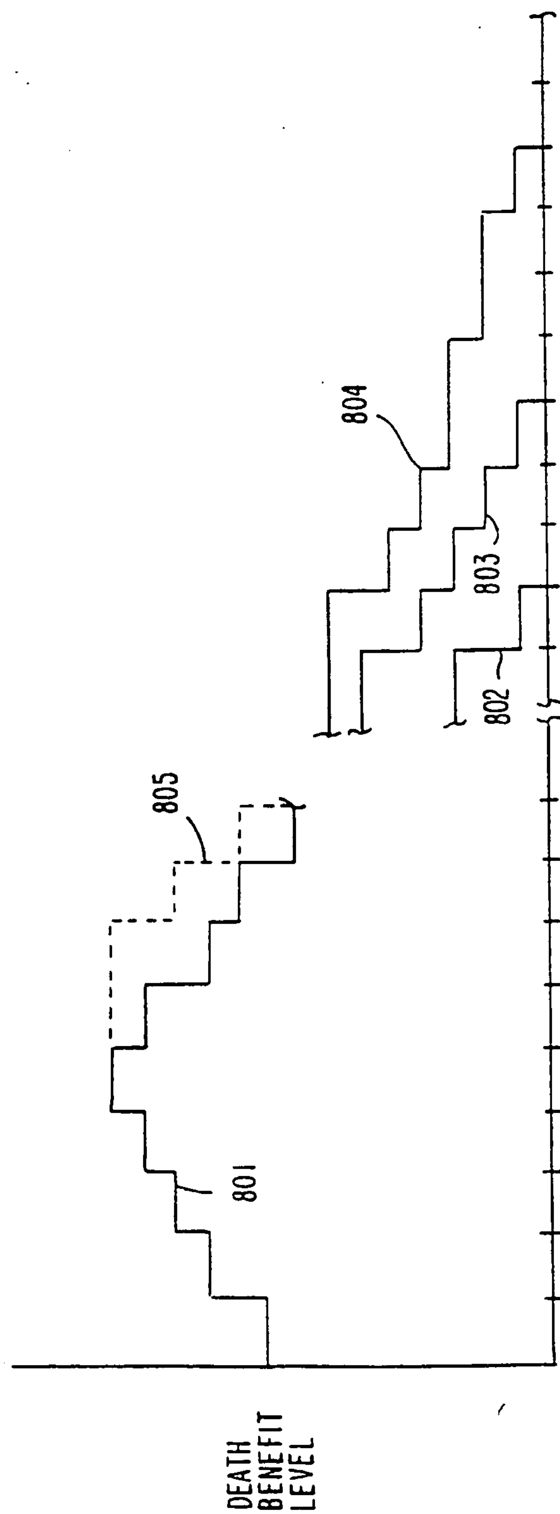
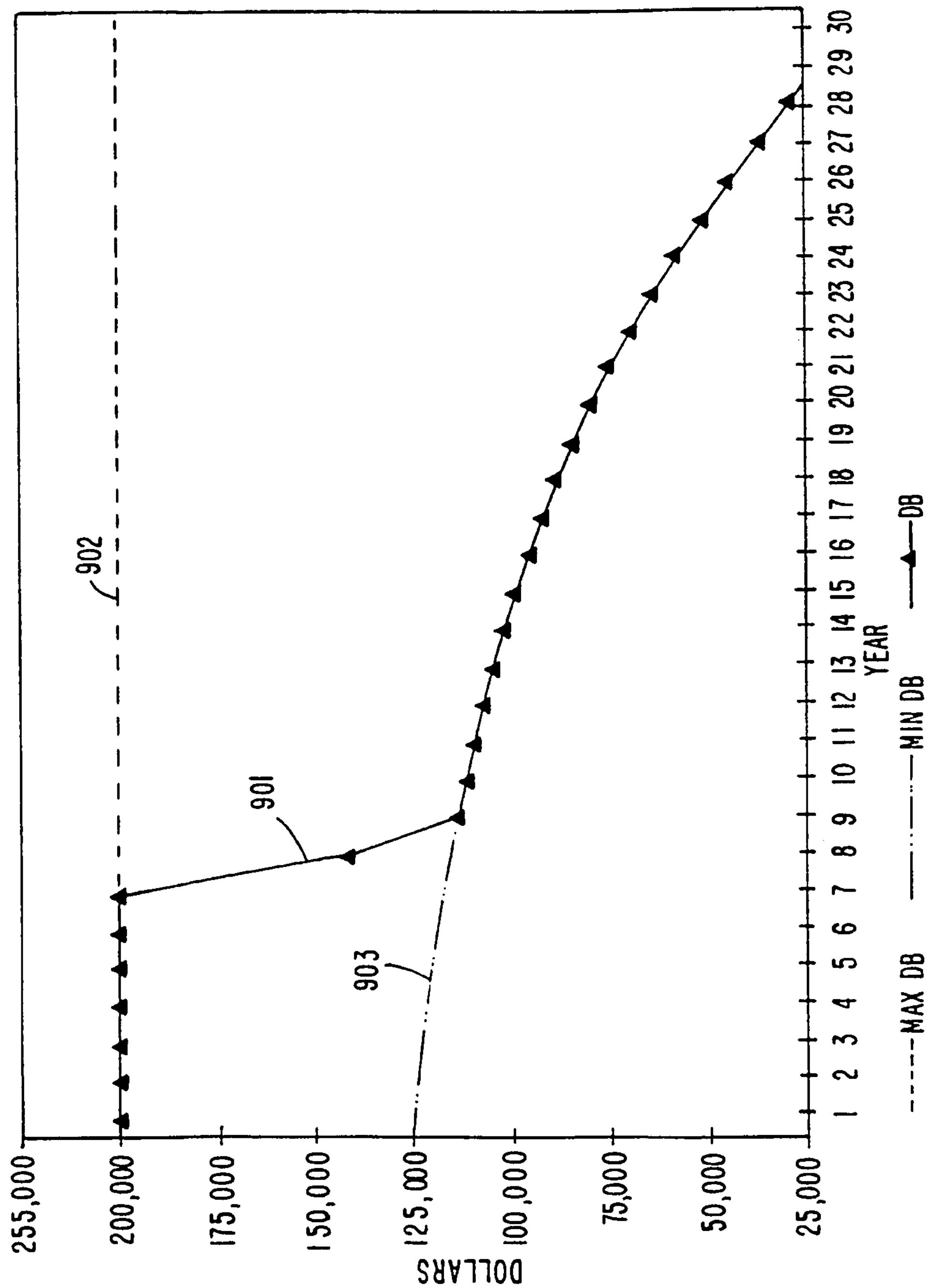
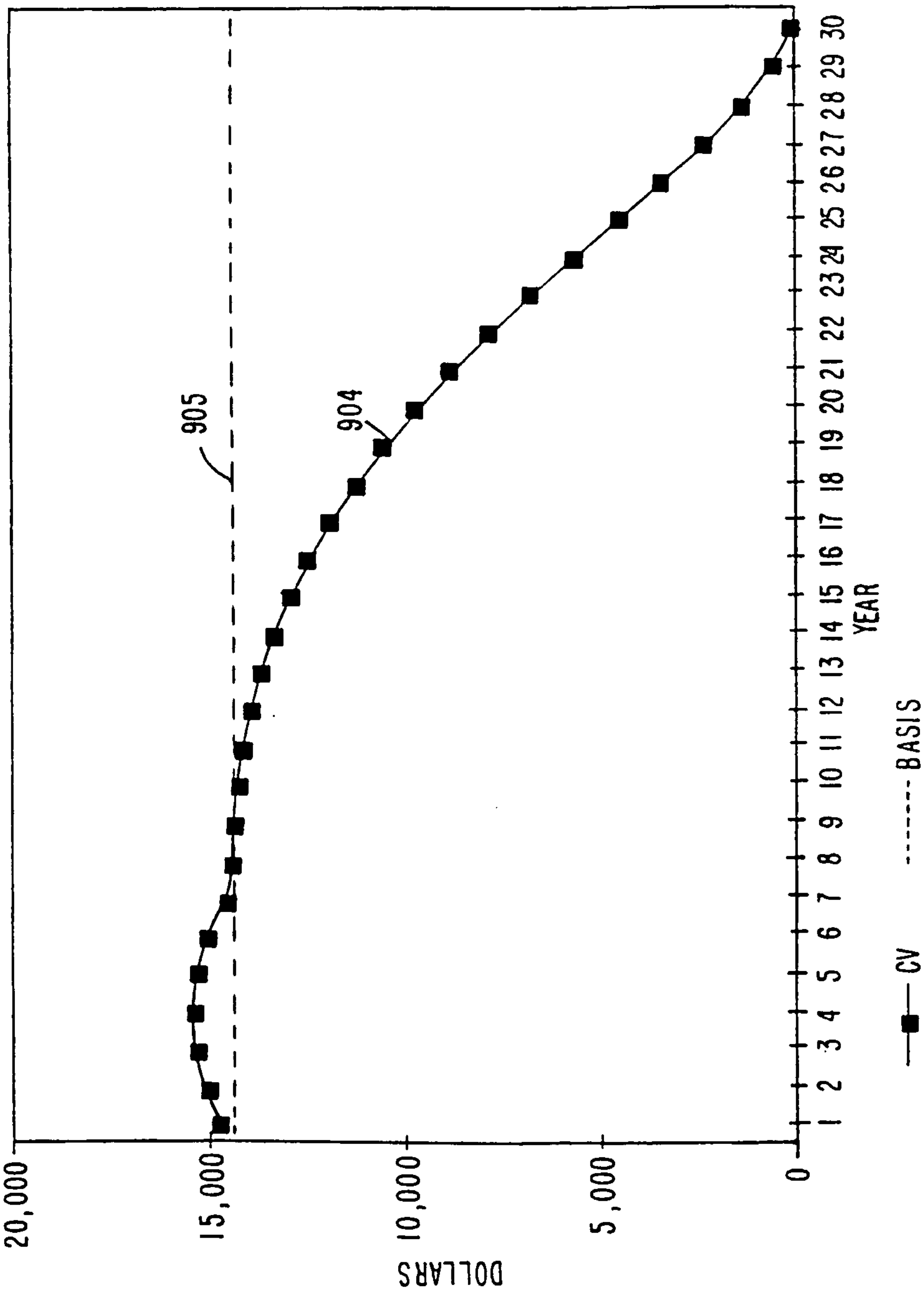

DEATH
BENEFIT
LEVEL
YEAR
1
2
3
4
5
6
7
8
9
27
28
29
30
31
32
33
34
35
801
802
803
804
805

FIG. 9a



902
901
903
DOLLARS
255,000
200,000
175,000
150,000
125,000
100,000
75,000
50,000
25,000
YEAR
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
MAX DB
MIN DB
DB

FIG. 9b


DOLLARS
20,000
15,000
10,000
5,000
0
YEAR
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
905
904
CV
BASIS

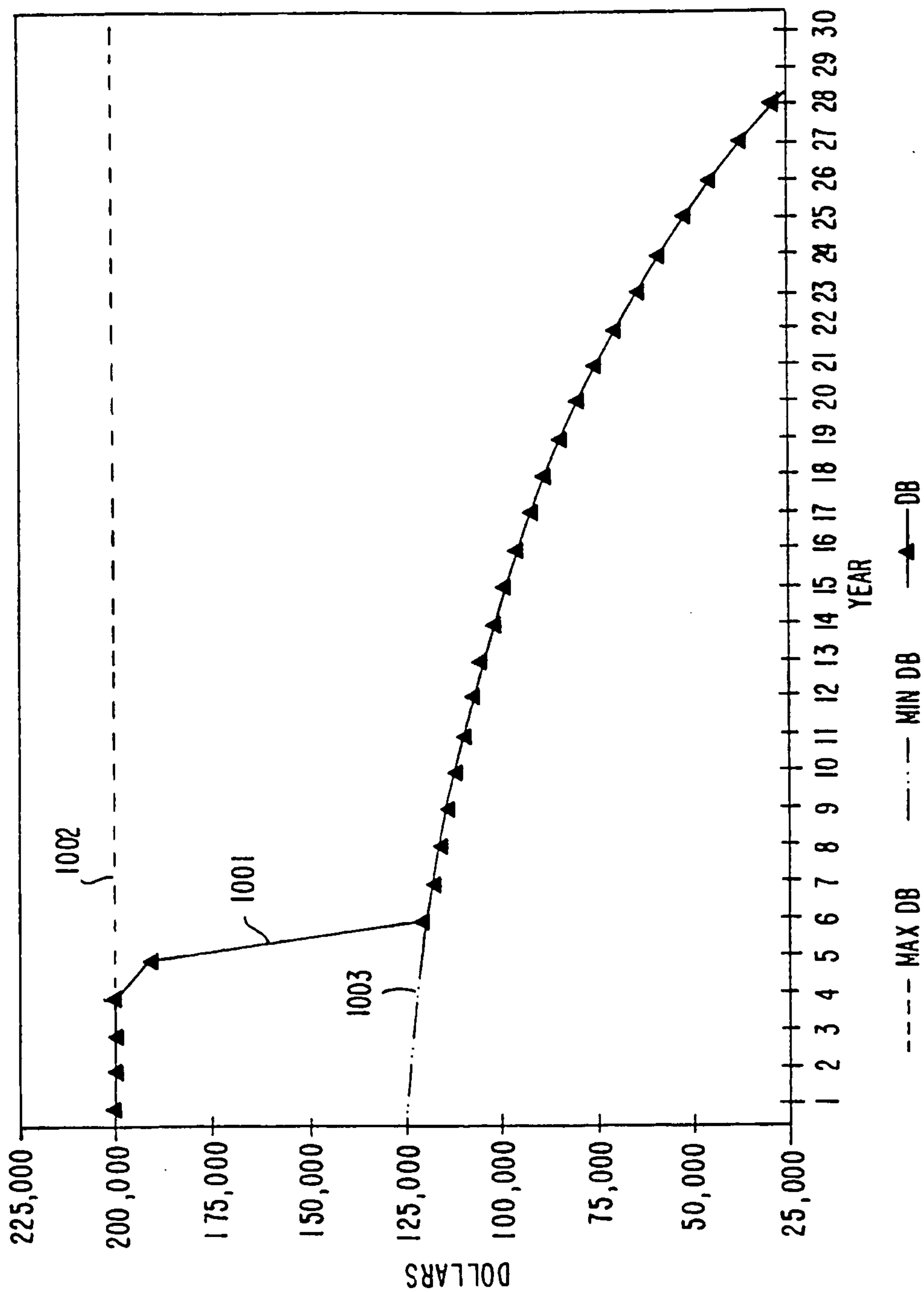

1002
1001
1003
225,000
200,000
175,000
150,000
125,000
100,000
75,000
50,000
25,000
DOLLARS
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
YEAR
MAX DB
MIN DB
DB

FIG. 10a

FIG. 10b

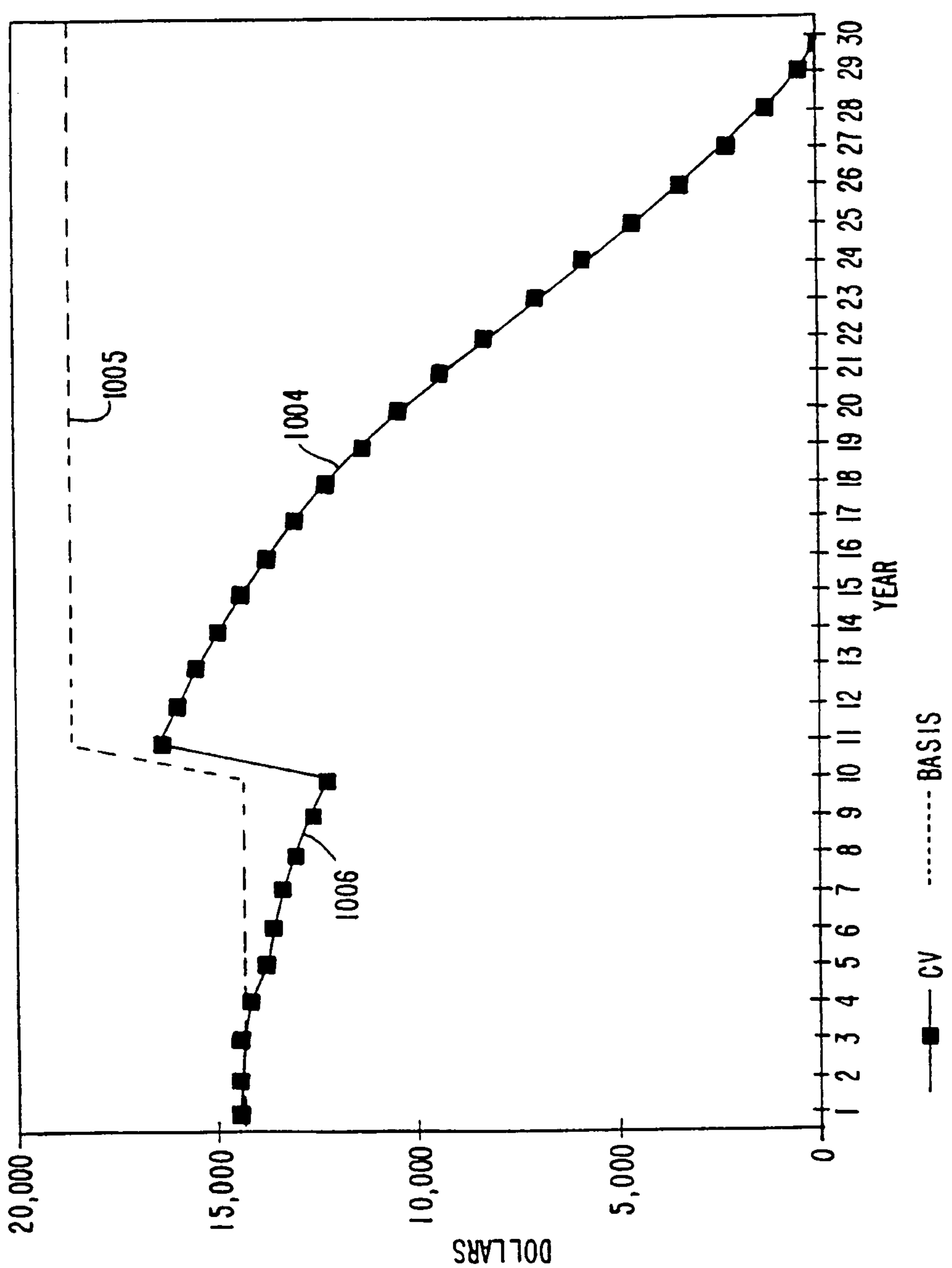
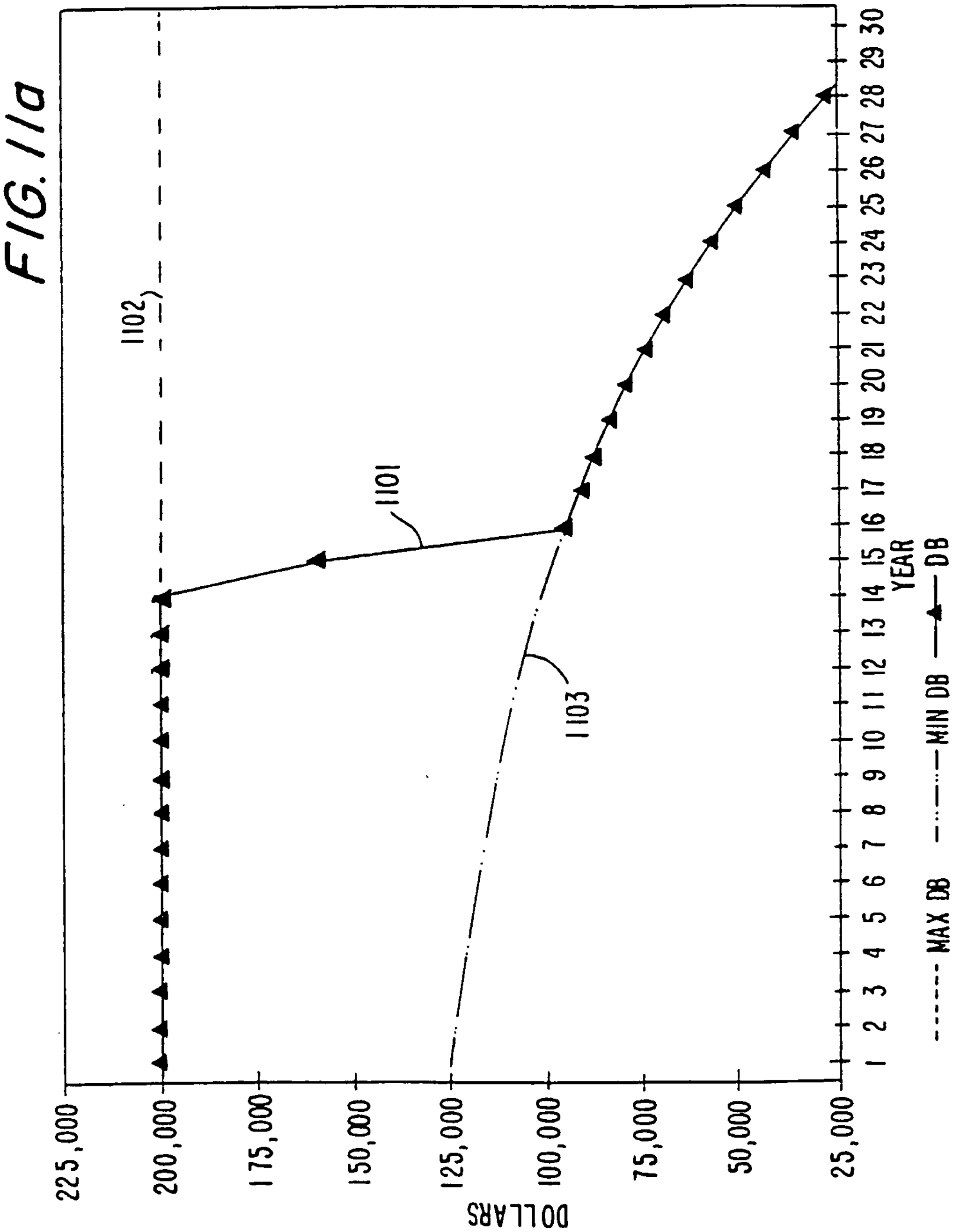

1005
1004
1006
DOLLARS
20,000
15,000
10,000
5,000
0
YEAR
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
CV
BASIS

FIG. 11a


1101
1102
1103
DOLLARS
225,000
200,000
175,000
150,000
125,000
100,000
75,000
50,000
25,000
YEAR
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
MAX DB
MIN DB
DB

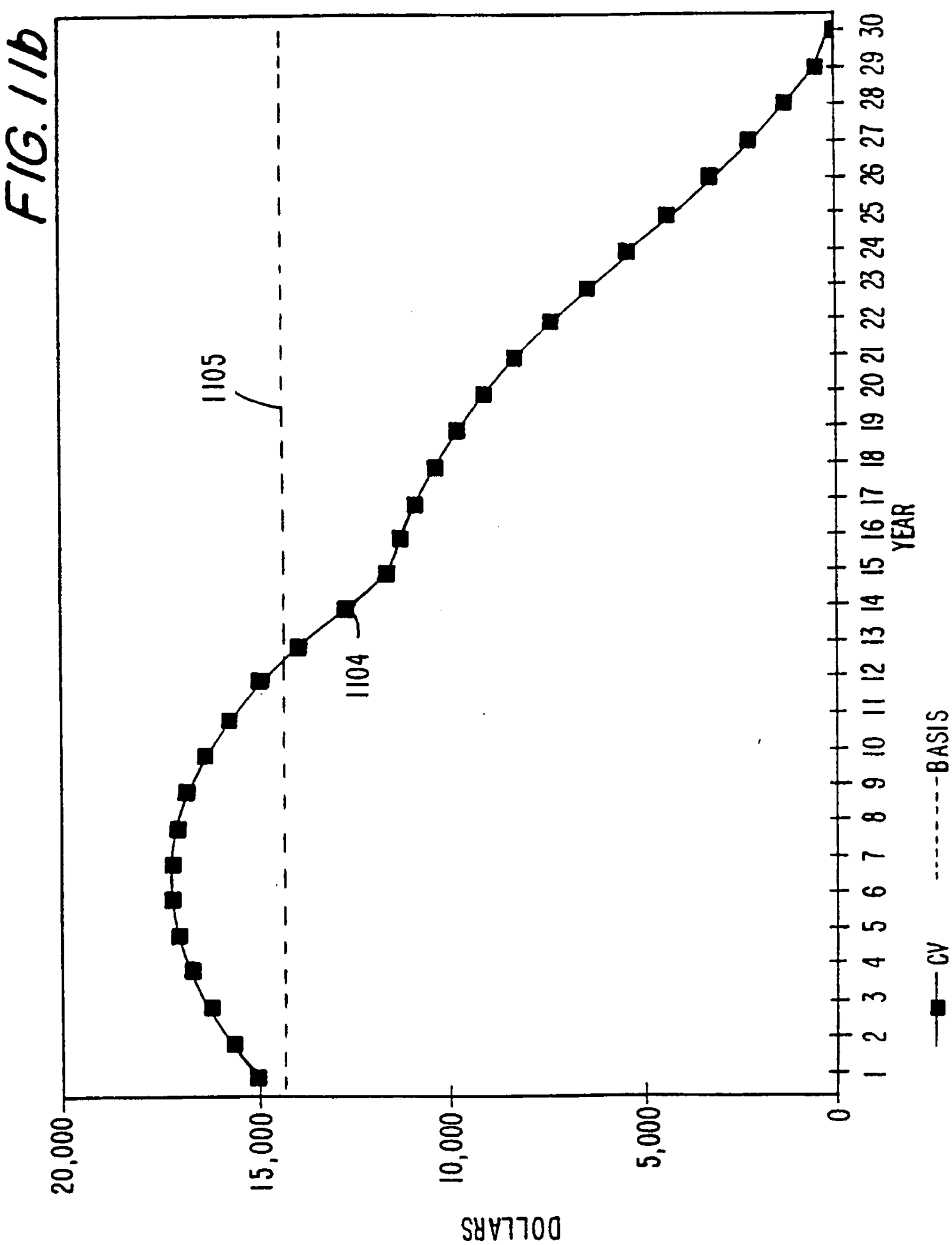


FIG. 11b
DOLLARS
20,000
15,000
10,000
5,000
0
YEAR
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
1104
1105
CV
BASIS